

## **Claims:**

1. An apparatus for enabling functionality of a component, said apparatus comprising:

an identification module, said identification module having an identification number stored therein;

a hash function module in communication with said identification module;

a host in communication with said identification module;

a guess register in communication with said host;

an encryption module in communication with said guess register;

a public key module in communication with said encryption module, said public key module having a public key stored therein; and

a comparator in communication with said encryption module and said hash function module,

wherein said comparator compares a first bit string to a second bit string to generate a function enable output for the component.

2. An apparatus for enabling functionality of a component as recited in claim 1, wherein said identification module further comprises an onboard non-volatile register.

3. An apparatus for enabling functionality of a component as recited in claim 1, wherein said hash function module further comprises a one-way hash function module configured to receive a pre-image input and output a hash value using a one-way hash function algorithm.

4. An apparatus for enabling functionality of a component as recited in claim 1, wherein said encryption module further comprises a public key encryption module, said public key encryption module being configured to receive the public key and a guess passcode as inputs and generate a ciphertext bit string as an output.

5. An apparatus for enabling functionality of a component as recited in claim 1, wherein said apparatus further comprises a selecting device for selecting at least one of the function enable output and a bonding option output.

6. An apparatus for enabling functionality of a component as recited in claim 5, wherein said selecting device further comprises an OR gate having at least one input for receiving said function enable output and the bonding option output.

7. An apparatus for enabling functionality of a component as recited in claim 6, said apparatus further comprising a bonding option circuit, said bonding option circuit comprising;

a pull up resistor in communication with said OR gate and a power supply;  
and

a switch in communication with a ground potential and said OR gate.

8. An apparatus for enabling functionality of a component as recited in claim 5, wherein said selecting device further comprises:

a multiplexer having at least one multiplexer input in communication with the comparator and a multiplexer output;

a selection circuit in communication with the at least one multiplexer input;

a bonding option circuit in communication with the at least one multiplexer input,

wherein said multiplexer is configured to receive a selection input from the selection circuit that is used to determine whether to enable functionality of said component in accordance with the bonding option output or the function enable output.

9. An apparatus for enabling functionality of a component as recited in claim 5, wherein said selecting device further comprises:

at least one first non-volatile memory location having at least one first selection bit stored therein;

at least one second non-volatile memory location having at least one second selection bit stored therein; and

an OR gate having a first input, a second inverted input, and a logic output, said first input being in communication with said at least one first non-volatile memory location and said second inverted input being in communication with said at least one second non-volatile memory location,

wherein said selection circuit is configured to generate a selection indicator on the logic output of the OR gate in accordance with the at least one first selection bit and said at least one second selection bit.

10. An apparatus for enabling functionality of a component as recited in claim 1, wherein said first bit string further comprises a ciphertext bit string generated by the encryption module.

11. An apparatus for enabling functionality of a component as recited in claim 1, wherein said second bit string further comprises a hash value generated by said hash function module.

12. An apparatus for enabling functionality of a component as recited in claim 1, wherein said component further comprises at least one of a network switch and a media access controller.

13. A component for selectively enabling functionality of an electronic device, said component comprising:

means for generating an encrypted bit string;

means for acquiring a guess passcode;

a hash function module in communication with an on board memory, said on board memory having a predefined identification number stored therein:

means for determining if the encrypted bit string matches the guess passcode; and

means for outputting a functionality enable signal.

14. A component for selectively enabling functionality of an electronic device as recited in claim 13 wherein said means for generating an encrypted bit string further comprises:

a public key encryption module;

a public key module in communication with said public key encryption module, said public key module having a public key stored therein; and

a guess register in communication with said public key encryption module,

wherein said public key encryption module receives the guess passcode

from the guess register and the public key from the public key module in order to generate a ciphertext bit string.

15. A component for selectively enabling functionality of an electronic device as recited in claim 13, wherein said means for acquiring a guess passcode comprises:

a host in communication with said means for generating an encrypted bit string;

an identification module in communication with said host,

wherein said host is configured to communicate with a manufacturer of the component to request the guess passcode corresponding to an identification number stored in said identification module.

16. A component for selectively enabling functionality of an electronic device as recited in claim 13, wherein said hash function module further comprises:

an on board memory, said on board memory having an identification number stored therein; and

a one-way hash function module in communication with said on board memory,

wherein said one-way hash function module receives an identification number from said on board memory and generates a corresponding hash value therefrom.

17. A component for selectively enabling functionality of an electronic device as recited in claim 13, wherein said means for determining further comprises a comparator.

18. A component for selectively enabling functionality of an electronic device as recited in claim 13, wherein said means for outputting comprises:

a bonding option circuit; and

an OR gate in communication with said bonding option circuit and said means for determining,

wherein said OR gate receives an input from at least one of said bonding option circuit and said means for determining and generates the functionality enable signal therefrom.

19. A component for selectively enabling functionality of an electronic device as recited in claim 13, wherein said electronic device further comprises at least one of a network switch and a media access controller.

20. A method for enabling functionality of an electronic component, said method comprising the steps of:

encrypting a first bit string and a second bit string to generate a third bit string;

calculating a fourth bit string;

comparing the fourth bit string to the third bit string; and

generating a function enable signal in accordance with the comparison.

21. A method for enabling functionality of an electronic component as recited in claim 20, wherein said encrypting step further comprises the steps of:

receiving a public key in an encryption module;  
receiving a guess passcode in the encryption module; and  
encrypting the public key and the guess passcode to generate a ciphertext  
bit string.

22. A method for enabling functionality of an electronic component as  
recited in claim 20, wherein said calculating step further comprises:

receiving an identification number in a hash function module; and  
generating a hash value corresponding to the identification number.

23. A method for enabling functionality of an electronic component as  
recited in claim 20, wherein said comparing step further comprises:

receiving the fourth bit string representing a hash value and the third bit  
string representing a cipher text bit string in at least one input of a comparator;  
and

determining if the fourth bit string matches the third bit string.

24. A method for enabling functionality of an electronic component as  
recited in claim 20, wherein said generating step further comprises the step of  
selecting at least one of a bonding option output and the function enable signal  
as a final enable output.

25. A method for enabling functionality of an electronic component as  
recited in claim 24, wherein said selecting step further comprises the steps of:

transmitting the bonding option output to an OR gate as a first input;  
transmitting the function enable signal to the OR gate as a second input;  
and

generating the final enable output from the OR gate in accordance with the first and second inputs.

26. A method for enabling functionality of an electronic component as recited in claim 20, wherein said encrypting step further comprises the step of determining a guess passcode.

27. A method for enabling functionality of an electronic component as recited in claim 26, wherein said determining step comprises the steps of:

requesting the guess passcode from a manufacturer;

calculating the guess passcode in accordance with a predetermined algorithm; and

transmitting the guess passcode to an on board host.

28. A method for enabling functionality of an electronic component as recited in claim 27, wherein said requesting step further comprises the steps of contacting a manufacturer through at least one of an internet connection, a telephone voice call, and a direct dial connection.

29. A method for enabling functionality of an electronic component as recited in claim 20, wherein said electronic component further comprises at least one of a network switch and a media access controller.